THE PULMOTOR - THE NEW APPARATUS INTRODUCED BY UNCLE SAM FOR RE-STORING LIFE

CLE SAM has very good reason to plume himself because of a number of important recent achievements that most distinctly make for progress. Some of triumphs have taken the form of new inventions for doing things that were virtually impossible of accomplishment heretofore and others, none the less valuable, have been in the line of discov-

eries of ways and means for doing things that have been done heretofore, but of doing them more easily, more quickly, more economically or more effectively than has heretofore been emed possible

The national government has been taking the lead in scientific, mechanical and enginecring development to a constantly increasing extent in late years. For, of course, the reader will understand that in speaking of Uncle Sam's current triumphs in the field of invention and experiment, reference is made not to the federal government as represented by its own experts and employes. Now the national government has always been a contributor to the cause of science and invention, there being dual reasons for its activity in such direction. On the one hand the central government, with paternal instinct, has been bound to contribute in every way to the wellbeing of the whole people and as is well known such benefit is more often than not conferred through the instrumentality of scientific discoveries and inventions. Obviously then it is up to Uncle Sam to foster Yankee

Ingenuity by every possible means. Yet the second incentive to federal activity in this broad field has been even more of a spur than the first. It arises from the fact that the national government is, to an extent



NEWLY INVENTED VACUUM GAUGE AT THE U.S. BUREAU OF STANDARDS

but this does not prevent the magnet from do ing stunts of great popular interest now and

When the magnet is charged with its ful electric current of 125 amperes a piece of meta, weighing hundreds of pounds might be sus pended at the pole pieces and the leakage, that is the "stray magnetic field" way cut at the ends of the magnet is sufficient to support in all sorts of positions wrenches and bars of iron weighing as much as five or six pounds aplece, whereas wire nails in series of half a

lezen or more, end to

end, are supported in

One of the most

amazing tricks per-

formed by the mag-

net is to support a

glass dish by means

of a small piece of

iron placed inside the

dish, the power of

being exerted upon

the iron through the

thickness of the lay-

er of glass. Another

impressive Illustra-

tion of the power of

this monster magnet

is afforded when a

handful of nails are

thrown in the air

feet away from the

magnet. As though

whisked in by an in-

specially for the United States government by

a firm of instrument makers in Switzerland.

The circumstances connected with the design-

Through this oil there are run coils of copper

tubing about one-half inch in diameter and

through this tubing cold water is circulated to

carry off the enormous heat which is devel-

is a yet newer invention-the product of gov-

ernment scientists-which promises great

things. It is known as a vacuum gauge and it

will enable more minute and more accurate

measurement than has heretofore been possi-

One of the most notable of Uncle Sam's

scientific triumphs of the present year is the

new system of multiplex telephony mentioned

above and which by its disclosure of a method

of transmitting a number of telephone mes-

sages simultaneously over the same wire is ex

pected to greatly reduce the cost of long dis-

tance telephone conversation. In connection

with the development of this new form of tel

carried on some experiments which, though

originally intended only as a means to an end,

own in disclosing the possibilities of transmit-

ephony which will make one wire do the

In the same room with the new magnet

opposite side of the Atlantic.

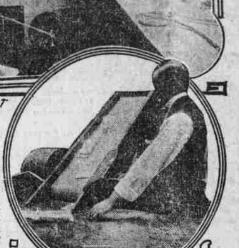
ble in the case of a vacuum.

horizontal

magnetic

position.

attraction



RECEIVING END'

MAIL CONVEYOR

OF A NOVEL NEW STYLE

and the mechanical lungs of the machine. It is said of this new invention that it will "make a corpse breathe," meaning that it will compel the diaphragm to move in a body in which life is wholly extinct. The new device costs \$800, making it one of the world's most expensive pieces of rescue equipment, as it is certainly one of the most effective. Comparatively little experience is required for its successful opera Government officials have within the past few

air-tight connection between the human lungs

months invented several new machines for quickening and cheapening the manufacture of paper money and postage stamps and whereas these inventions may not find very extensive adoption outside the government workships, they will exert an important influence there. Among these new inventions is a remarkable combination machine which at one operation stamps the successive serial number on each bank note, impresses in color the official seal, cuts the sheets of money into individual notes and counts the bills-tasks that formerly required as many different machines and an im mense expenditure of time. Another new invention is a machine which automatically trims at one stroke all four edges of a sheet of bank notes. A third new invention is a machine for automatically wetting the sheets of paper used in printing our currency-a chore that had for-



TRANSMITTING PHONOGRAPH MUSIC BY PHONE

ANOTHER NEW STYLE MAIL CONVEYOR appreciated by comparatively few of our citizens, an operator of scientific laboratories, a manufacturer and a business corporation. Now with Uncle Sam in the actual conduct of arts and industries on a greater scale, in some instances, than they are being carried on by any private corporation, it has become imperative from the hard, practical business standpoint that the government shall have the benefit of the highest possible attainments in time and labor-saving equipment.

surface:

In the effort to keep abreast of or a little ahead of the world's march of progress, the federal establishment has continually carried on tests and experiment with a view to disclosing new canabilities in instruments and apparatus of one kind or another that rank as commercial products and as such may be bought in the open market. But a large share of what has been accomplished these past few years has been due to new inventions evolved by government officials. And it is pleasing to note that there is an increasing disposition on part of the men on Uncle Sam's payroll to regard as federal property the inventions from which they might otherwise reap a fortune. There have, from time to time, been charges and rumors putting in question the ethics and bonesty of men who derived private wealth from inventions alleged to have been worked out in government time and with the aid of facilities offered by a governmental position. Happily, however, such cases appear to be growing more rare and to counterbalance the isolated instances we have examples such as recently afforded by Major Squier, assistant chief signal officer of the United States army, when he dedicated to the free use of the American people the patents covering his newsystem of multiplex telephony.

Some of the most spectacular of Uncle Sam's current scientific triumphs are being worked out by the aid of the most powerful magnet in the world, which has recently been installed at a cost of \$1,200 at the United States bureau of standards. This magnet is in effect an enlarged edition of the familiar toy from which small boys derive so much enjoyment and it may be whispered that the government scientists are getting a proportionate amount of excitement from the almost miraculous powers of this largest of all magnets. Primarily the new magnet is employed by the government experts for optical work of the most highly technical character-a pushing back of the bounds of the unknown in this scientific field-

perhaps three or four was the particular form of melody transmitted and the results were really surprising in many respects. For one thing the music as heard at the other end of the line was remarkably visible hand and almost more quickly than clear and sweet. Indeed it was seemingly the eye can follow the operation, these nails more perfect tone production than that obtainare one and all drawn to the highly magnetized able under any other conditions inasmuch as the telephone served to entirely eliminate the This new magnet, a world's record breaker "needle nose," the one suggestion of the me-In size as well as in power, was constructed chanical which talking machine inventors have never been able to entirely eliminate. It is believed that this disclosure of the possibilities of transmitting music by phone will ultiing of the magget illustrate how great minds mately enable people to enjoy concerts by the may run in the same direction. Mr. Frederick best vocal and instrumental talent when seat-Bates, the United States government expert ed in their own homes. This would, of course, who is at the head of the division of polarimetprove an especial boon in the case of suburry at the bureau of standards and working in banites and residents of the rural districts conjunction with other government scientists, where the use of the telephone has increased just worked out the detailed plans for such a so tremendously in recent years. In the exmagnet when he discovered that the foreign periments with multiplex telephony the graphinstrument makers who ultimately built this ophone music was employed to still further one for our government had been covering the demonstrate the possibility of using a single same ground at the same time, each inventor wire for the transmission of various messages unconscious of the activities of his rival on the simultaneously, each independent of the others. For instance, on one occasion Caruso, by Perhaps the most unusual attribute of this means of a "talker," sang on the line while magnet is that it is made available for con-"The Charge of the Light Brigade" (as retinuous use, this being accomplished by recited into a separate transmitter close at hand) placing ordinary insulated wires such as are was carried over the same wire at the same commonly used with copper tape. This coptime without in any way interfering with the per tape is surrounded by insulating oil.

famous tenor's voice. Of Uncle Sam's recent innovations in technical equipment none bids fair to ultimately work greater wonders than the lately intro duced Pulmotor. The Pulmotor is a delicate ly adjusted machine that occupied a portable case not much larger than the ordinary dresssuit case, and its function is to bring back to life persons supposed to be dead, The government provided the first of these new miracle workers for the use of the newly established United States bureau of mines in its work of rescuing men overcome by the poison ous gases in coal mines, but the advent of the invention is opening up life-saving possibilities in other fields, as, for instance, at bathing beaches and in city hospitals-in short in any case where death is threatened through the filling of the lungs with gas or water.

The Pulmotor is, in effect, an automatic breathing machine, its function being to draw the poisonous gases out of the lungs and to force into the lungs in turn the life-giving of ten, Major Squier and his associates have oxygen. The mechanism includes a cylinder in which oxygen is stored under pressure, a blownow promise to have a distinct value of their ing and suction valve actuated by two accordion bellows, and a hood or mask which fits over the The music of a phonograph or saphophone mouth and nostrils of the patient, making an

merly to be done by hand-and a fourth invention is a mechanism which neatly arranges in coils the postage stamps which are to be placed on sale in vending or stamp-selling machines which it is planned to introduce in this country following the example of Germany and

other foreign countries. Much has been printed from time to time regarding the "machines that almost think" vented by the mechanical experts of the United States census bureau to aid Uncle Sam in the big task of counting noses. However, there is one invention, newer than any of the others regarding which little has been said. This is the automatic card-sorting machine, the function of which is to sort mechanically the ninety odd million cards representing the people of the United States-for, under our present system of card-indexing the country the census office has on file a bit of pasteboard to represent every man, woman and child in the republic. new sorter sorts cards at a speed of from 300 to 325 per minute, sorting the cards into thirteen different drawers. The machine is operated by electricity and the sorting is done through the medium of sensitive needles which seek out the holes which have previously been punched in each card to record biographical facts and distribute the cards according to the location of these holes.

Uncle Sam's greatest business institution, the postoffice department, has lately fostered its share of new inventions aside from the stampvending machines with which it has long been experimenting. The late noveltles include an electric canceling machine for canceling the stamps on letters and postmarking the envelopes; a trolley system for handling mail in city postoffices and a belt conveyor system for the same purpose. Two clerks in the postoffice department lately invented a machine that cuts down work 20 per cent. in the money order branch of our postal headquarters, through its faculty in automatically printing the money order fees as the amounts of the paid money or ders are recorded for auditing purposes. And finally, the department is on the eve of perfecting a remarkable new machine for the use of every postmaster throughout the country who conducts a branch of the new postal savings bank. This last-mentioned invention is suggest tive in appearance of the familiar cash register and its function is to mechanically fill out the deposit alips of the lately-established "poor man's bank," a work that had formerly to be done by hand. Not only will this new mechanteal totler save time and labor, but it will make dishonesty virtually impossible on the part of any employe handling postal bank deposits.

BUSINESS BUILT UP BY UNFAIR TAX ON CONSUMERS.

Congressional Committee Has Brought Forth Facts That Should Cause Voters to Do More Than a Little Thinking

The congressional committee that started an investigation of the United States Steel corporation uncovered ensations" which have been matters of public knowledge for ten years.

The fact that Carnegie received for his Pittsburg plants \$160,000,000 more than he was willing to take a few months before the trust was organised received widespread publication at the time.

As the investigation proceeds the committee doubtless will "discover" also that other properties were turned into the trust for millions upon mil lions more than they were worth. Reference to the plan of the organization of the United States Steel corporation will show that about \$450,000,000 in United States Steel stock was given in exchange for about \$400,600,000 of capital of six large corporations which had been organized a few years previously, every one of which had been created with a capitalization very much in excess of the actual value of its properties.

It was well known then that the 500 millions of United States Steel corporation common stock and a considerable portion of the 500 millions of preferred stock represented no tangible value in property.

With these facts well known, the freedom of the United States Steel corporation from congressional investigation and legal prosecution during the past ten years is a mystery. An explanation for it is the policy of candor and publicity adopted by E. H. Gary, the chairman of the executive committee of the concern, early in its career, and the efforts that have been made to build up the properties of the corporation so that they would more nearly approximate the capitalization. Several hundred millions of earnings have been put into the new properties and an enormous increase in the value of the corporation's coal lands and iron mines has occurred, so that the actual value of the corporation's properties is much closer to its capitalization today than ten years ago.

But the fact cannot be overlooked that this result has been possible only because the steel business has yielded excessive profits. The material capitalization of the trust has necessitated an unfair tax on consumers of iron and steel, to pay dividends and interest and to build up the value of the properties.

Lumber and Reciprocity.

Scratch a Russian, said Napoleon, and find a Tartar. Scratch a "farmer" opposed to reciprocity at Washington nowadays and find the lumber trust. The duties on lumber and wood which we remit under the agreement with Canada amounted last year to A combination in re-\$1,323,630. kets, a blacklister, an extortioner and a conspirator, as this trust is described in the arraignment just filed by Attorney General Wickersham, is not going to surrender the advantage which it derives from this unnecessary tax except under compulsion. It is this forestaller and engrosser which speaks through most of the "farmers" who have been heard at Washington. Commissioner of Corporations Smith recently reported that 195 holders, most of them in combination, control one-half of all the privately owned timber in the United States. It was these gentlemen or their agents who at an expense of \$100,000 "put over" Mr. Lorimer in Illinois. Are the other senators who are trying to defeat reciprocity doing their best to "put one over" for the lumber trust?-New York World.

Anybody Proud of the Senate? It may be wondered whether any considerable element of the Republican party of the country feels any sense of pride or satisfaction in the present course of the majority in the pational senate.

Here is "the greatest deliberative body in the world" fooling away its time, obstructing legislation, defying the advice and wishes of the president and doing nothing.

With promptitude and even enthusiaam, the house of representatives has attended to the matters covered by the president's call for the extra ses sion. It has gone further, in initiating and carrying to completion the consideration of matters and measures for the good of the country.

But that senate, controlled by men bers of the party which elected the president, persists in ignoring and opposing the very matters for the conalderation of which it was called to

Is anybody in all this wide republic proud of that aggregation of alleged statesmen?

Work of Special Session.

There is every reason to believe that the Canadian treaty will be passed before adjournment comes and it seems no less certain that the constitutional amendment for the direct election of senators will pass the senate at this session. The enactment of two such measures as reciprocity and the popular election of senators will make the special session well worth while, even if nothing more is accomplished in the way of general legislation.

Mission of Democracy. The purpose of Democracy, as de-

fined by Woodrow Wilson, is not to upset things but to set things right, a definition that should be more generally understood among voters who see many things that ought to be set right but don't see any particular need for a general upsetting.

Ex-Senator Aldrich is said to have "readjusted his tariff views." public will rejoice that he is out of office. It can't stand another upset by reason of a still higher tariff.

STEEL TRUST PROFITS WICKERSHAM FAILS IN DUTY

Attorney General Consistently Treats Trust Lawbreakers as Favored Class of Criminals,

Something like three years must pass before the suit brought by Attorney General Wickersham against the lumber trust can be finally settled in the court of last resort. When the last word is uttered by the Supreme court the lumber trust stock may take a jump upward as Standard Oil shares did on the curb when the decision against it was announced. And as in the Standard case no individual personally guilty of the crime alleged against the lumber trust corporation will go to fail.

This is making a joke of a crimin statute strong enough to stop conspiracles in restraint of trade-when honestly enforced. Mr. Wickersham's inexplicable refusal to indict the violators and put them in jail brings the Sherman law into further contempt from the lawmakers. Every time he files one of his puerile civil actions for dissolution Wall street shakes its sides with mirth. Injunctions against; such criminals are as ridiculously ineffective as injunctions would be

against counterfeiting and burglary. The Sherman law is a penal statute, and only by enforcing its severest penalties can any respect be gained for it. When the attorney general fails to prosecute criminals by proceeding personally against them he violates the spirit of his cath of office: It then becomes the duty of the president of the United States to dismiss him from office and appoint an attorney general who will no longer treat the trust lawbreakers as a avored class of criminals.

## PEOPLE TO LEARN THE FACTS

Truth About the Steel Trust, Gigantic "Confidence Game," Is Being Revealed by Investigation.

When Mr. Stanley introduced his resolution in the house of representatives, calling for an investigation of the steel trust, there was no possibillty of favorable consideration during that session of congress-the

house was Republican. When it became apparent that Democrats would dominate the house in the present session, arguments loud and long were made against the adoption of the resolution. It was held by opponents of the Stanley measure that it would be unjust, unfair and posttively unnecessary to have an investigation when the steel trust affairs

were pending in the courts. But Mr. Stanley pushed the matter. The resolution was adopted by the Democratic house. The investigation

has begun. It is intimated in some quarters that John W. Gates, in his testimony before the committee, has not "told all" he knows" about some of the dealsnotably that in connection with the Tennessee Coal and Iron company. However, Mr. Gates has given the pub-

lic some very interesting reading. Developments so far justify the action of Mr. Stanley in refusing to lay aside or delay action in the matter. straint of trade, a monopolizer of mar- The people will be afforded opportunity to know the inside workings of one of the most gigantle confidence games ever worked upon the nation.

> Democratic Theories Confirmed. Democratic contentions of 1910 are very handsomely con the events of the present spring and summer. It was argued that, in spite of the superficial danger of deadlock involved in a situation where the house of representatives was held by one party and the presidency by another, the sequel would show that legislation of real merit, the reciprocity treaty, for example, would experience no difficulty in receiving cheerful support from both the executive and the

> Subsequent history has confirmed the soundness of this Democratic view. The president and the house, under its wise and able leadership, have worked together like a happy family, and the more than friendly relations between the White House and Speaker Clark have presented the country a most gratifying exhibit in statesmanlike amity and patriotic cooperation to the common good.

Need an Andrew Jackson. The protected manufacturer, course, desires to have the bars down, even if it affects the middle class, who are the very backbone of the republic. Some day they will rise in their might and the protective tariff and the allen steamship influences will be crushed. An Andrew Jackson is needed.

Let the People Say So. The United States senate's greatest exponent of the term "I object." Mr. Heyburn of Idaho, at a recent session declared "the people do not want direct election of United States sena-If so, why doesn't the gentleman from Idaho cease his objecting and allow "the people" to say so?

Jingolsm Runs Away With Him. questions respecting honor, independence and integrity-such questions as courts settle for individuals-is the beneficent purpose of the arbitration treaty. History proves the sensible and honorable method proposed to be quite feasible. Mr. Roosevelt's inerent jingoism again runs away with his judgment.-New York World.

"What is the senate going to do?" inquires a contemporary. That's just what the senate would like to know.

"The time is coming when an hon-"The time is country." "What do you call succeeding in business?" "Why-er-keeping a high tariff on the things you are producing."—Chi-

That report that J. Plerpont Morcan used the influence of the United States government to further his for eign financial operations is somewhat like an earlier news item to the effect that the Dutch had captured Hol-

## Has a Parrot That Thinks

Birds, Relates How a Pet Asked for a Certain Seed.

M. Pierre Hachet Souplet, writing on the intelligence of birds and ani-mais, relates a remarkable accomplishment on the part of a parrot. He admits that the bird was an exceptionally clever specimen, and he considers its achievement indicates the

Writer, Teiling of the Intelligence of high-water mark of possibilities in this direction so far as parrots are con-

ting music by telephone.

He had taught Polly to use the words "cupboard" and "ladder," and as he climbed the ladder he had sucpart of a parrot. He latte the word "climb." Every day when the bird was an exception, and he consent indicates the Polly helped herself to hempseed. One

being places shere she could reach it. in anger, but it got no farther. That it was hauled up near the celling, and day the bird received millet, which it being places shere she could reach it. the ladder was placed among several other articles in the corner of the

The question to be decided was whether the bird, seeing that the cupboard was out of M. Souplet's reach, would have sufficient intelligence to use words it knew in their proper sequence. The first day's experiment stantly came the words, "Ladder, have trouble with n was a fallure. The parrot screeched climb—cupboard," and Polly, having of good a flattron to "Cupboard—cupboard," beating its learned her leason, the cupboard was jet would be to me." quence. The first day's experiment was a failure. The parrot screeched

did not care for; the hempseed, which it was very fond of, being locked up in the cupboard.

Next day Polly was in a greater emper than ever, and after a desperate effort to break through the bars of her cage she finally caught sight of the cupboard year the cetling. In-

brought down and she was rewarded with some hempseed. M. Hachet Souplet looked upon this incident as proof of the association of ideas in the bird's mind, as no one had ever taught the parrot the phrase she created.

No Use to Her. "Can't I sell you an electric flat-

iron?" said the agent. "You cannot," said she. "When have trouble with my husband a lot of good a fintiron tied to an electric